

What is claimed is:

1. A rheoforming apparatus comprising:

a first sleeve, an end of which is formed with a slurry outlet port for releasing a slurry;

a second sleeve for retaining a molten metal, an end of which communicates with the first sleeve;

a sealing member for opening or closing the end of the second sleeve;

a stirring unit for applying an electromagnetic field to the second sleeve; and

a first plunger, which is slidably inserted into the other end of the second sleeve to press the slurry manufactured in the second sleeve.

2. The rheoforming apparatus of claim 1, wherein the sealing member is a stopper that is removably installed at the end of the second sleeve communicating with the first sleeve.

3. The rheoforming apparatus of claim 1, further comprising a forming unit, which is installed outside the slurry outlet port of the first sleeve to form a predetermined product from the slurry released from the slurry outlet port.

4. The rheoforming apparatus of claim 3, wherein the forming unit comprises:

a transfer roller for transferring the slurry released from the slurry outlet port; and

a cooler for cooling the slurry transferred by the transfer roller.

5. The rheoforming apparatus of claim 3, wherein the forming unit is a press-forming unit comprising a press die that forms a predetermined product by pressing the slurry released from the slurry outlet port.

6. The rheoforming apparatus of claim 3, wherein the forming unit is a forming die comprising a moving die and a fixing die that define a predetermined forming cavity so that the slurry released from the slurry outlet port is inserted into the forming cavity.

7. The rheoforming apparatus of claim 1, further comprising a first temperature control unit, which is installed around the first sleeve to adjust the temperature of the slurry pressed toward the slurry outlet port.

5 8. The rheoforming apparatus of claim 1, further comprising a second temperature control unit, which is installed around the second sleeve to adjust the temperature of the molten metal retained in the second sleeve.

10 9. The rheoforming apparatus of claim 1, wherein the second sleeve is made of a non-magnetic material.

15 10. The rheoforming apparatus of claim 1, wherein the first sleeve has a cylindrical shape parallel to the ground, and the second sleeve is coupled with the first sleeve by moving at a predetermined angle with respect to the first sleeve.

11. The rheoforming apparatus of claim 10, wherein the stirring unit moves together with the second sleeve.

20 12. The rheoforming apparatus of claim 1, wherein the second sleeve is branched from the first sleeve, and the rheoforming apparatus further comprises a second plunger slidably inserted into the other end of the first sleeve to press the slurry in the first sleeve toward the slurry outlet port.

25 13. The rheoforming apparatus of claim 1, wherein the second sleeve is formed in a shape flared from the end intended for the insertion of the first plunger to the end communicating with the first sleeve.

30 14. The rheoforming apparatus of claim 1, further comprising an electromagnetic field control unit, which is electrically connected to the stirring unit and controls the stirring unit in such a manner that an electromagnetic field is applied to the second sleeve from prior to pouring the molten metal in the second sleeve and is stopped when crystalline nuclei are formed in the molten metal.